

# Notice of Allowability

Application No.

09/632,857

Examiner

Chirag G. Shah

Applicant(s)

SORRELLS ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 1/4/05.
2. ☒ The allowed claim(s) is/are 1-4, 6-16, 18-22, 24-26, 28-50, 52-58, 60-63; renumbered 1-57 respectively.
3. ☒ The drawings filed on 04 August 2000 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

*Ajit Patel*  
**Ajit Patel**  
**Primary Examiner**

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

## REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, Prior Art fails to disclose a receiver comprising a frequency down-conversion module, wherein the frequency down-conversion module comprises a switch module and a storage element, wherein a first node of the switch module is coupled to a first node of the storage element, wherein the storage element comprises a capacitor in combination with other limitations set forth in the respective claim.

Regarding renumbered claim 6, Prior Art fails to disclose of a receiver wherein each storage element comprises a capacitor, wherein the each capacitor corresponding to the first and second frequency down-conversion modules reduces a DC offset voltage in the first down-converted signal and the second down-converted signal, wherein the first and the second DC offset voltages are at least due to charge injection effects in the first and second frequency down-conversion modules, respectively in combination with other limitation set forth in the respective claim.

Regarding renumbered claim 8, Prior Art fails to disclose of a second frequency down-conversion module, a first adder module, a third frequency down-conversion module, a fourth frequency down-conversion module and a second adder module that adds the fourth down-converted signal and the third down-converted signal and outputs a Q-phase demodulated signal in combination with other limitation set forth in the respective claim.

Regarding renumbered claim 20, Prior Art fails to disclose a means for combining the I harmonically rich signal and the Q harmonically rich signal, to generate a I/Q harmonically rich signal, the I/Q harmonically rich signal having multiple harmonic images that contain amplitude and frequency information for reconstruction of the I and Q phase signals, wherein the first and second control signals comprise pulse that operate to improve energy transfer to a desired harmonic image in the corresponding I and Q harmonically rich signals in combination with other limitation set forth in the respective claim.

Regarding renumbered claim 21, Prior Art fails to disclose of a combiner, coupled to an output of said first controlled switch and an output of said second controlled switch, said combiner combining said first harmonically rich signal and said second harmonically rich signal, resulting in a third harmonically rich signal; wherein said first control signal and said second control signal comprise pulses that operate to improve energy transfer to a desired harmonic in said third harmonically rich signal in combination with other limitations set forth in the respective claim.

Regarding renumbered claims 25-27, Prior Art fails to disclose wherein said receiver comprises a differential phase shift keying modulation receiver, wherein said differential phase shift keying modulation receiver receives said input RF signal and outputs a down-converted demodulated signal, and wherein said physical medium dependent sublayer further comprises: a de-spread correlator that receives said down-converted demodulated signal and receives an 1

1-bit Barker word, wherein said de-spread correlator outputs a de-spread signal in combination with other limitations set forth in the respective claim.

Regarding renumbered claim 29, Prior Art fails to disclose wherein said transmitter comprises a differential phase shift keying modulation transmitter, and wherein said physical medium dependent sublayer further comprises: a scrambler that receives at least a portion of at least one PPDU frame and outputs a scrambled at least one PPDU frame portion; a modulo-z adder that receives said scrambled at least one PPDU frame portion, wherein said modulo-z adder receives an 1 1-bit Barker word, and wherein said scrambler outputs a spread signal in combination with other limitations set forth in the respective claim.

Regarding renumbered claim 31, Prior Art fails to disclose wherein said receiver comprises a Gaussian frequency shift keying modulation receiver, wherein said Gaussian frequency shift keying modulation receiver receives said input RF signal, wherein said Gaussian frequency shift keying modulation receiver outputs a demodulated signal, wherein said physical medium dependent sublayer further comprises: a data de-whitener that receives said demodulated signal and outputs at least a portion of at least one PPDU frame in combination with other limitations set forth in the respective claim.

Regarding renumbered claim 33, Prior Art fails to disclose wherein said transmitter comprises a Gaussian frequency shift keying modulation transmitter, wherein said physical medium dependent sublayer further comprises: a data whitener that receives at least a portion of at least one PPDU frame and outputs a whitened at least one PPDU frame portion; and a transmit Gaussian shaping filter

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that receives said at least one whitened at least one PPDU frame portion and outputs a filtered signal in combination with other limitations set forth in the respective claim.

Regarding renumbered claim 36, Prior Art fails to disclose wherein said receiver comprises a phase shift keying quadrature amplitude modulation (PSK/QAM) receiver, wherein said PSIUQAM modulation receiver receives said RF input signal and outputs a demodulated signal, wherein the physical medium independent sublayer further comprises: a fast Fourier transform (FFT) module that receives said demodulated signal and outputs a FFT module output signal; a bit de-interleaving and de-mapping module that receives said FFT module output signal and outputs an encoded at least one data frame; and a convolutional code decoder that receives said encoded at least one data frame and outputs at least a portion of at least one PPDU frame in combination with other limitations set forth in the respective claim.

Regarding renumbered claim 39, Prior Art fails to disclose wherein said transmitter comprises a phase shift keying quadrature amplitude modulation (PSIUQAM) transmitter, wherein said physical medium dependent sublayer further comprises: a convolutional encoder that receives at least a portion of at least a PPDU frame and outputs an encoded at least one PPDU frame portion a bit interleaving and mapping module that receives said encoded at least one PPDU frame portion and outputs at least one bit interleaved and mapped signal; and an inverse fast Fourier transform (IFFT) module that receives said at least one bit interleaved and mapped signal and outputs an IFFT module output signal; and

wherein said PSK/QAM modulation transmitter receives said VFT module output signal and transmits said output RF signal in combination with other limitations set forth in the respective claim.

Regarding renumbered claim 40, Prior Art fails to disclose wherein said physical layer comprises a high rate direct sequence spread spectrum physical layer, wherein said transmitter comprises a phase shift keying (PSK) modulation transmitter, wherein said output RF signal comprises a packet binary convolutional coding modulated signal, wherein said physical medium dependent sublayer further comprises: a scrambler that receives at least a portion of at least one PPDU frame and outputs a scrambled at least one PPDU frame portion; a binary convolutional code encoder that receives said scrambled at least one PPDU frame portion and outputs an encoded signal; a cover code sequence generator that receives a 16-bit cover code seed and Outputs a cover sequence; and a PSK cover code map module that receives said cover sequence and said encoded signal, and outputs a mapped signal; and wherein said PSK modulation transmitter receives said mapped signal, wherein said PSK modulation transmitter transmits said output 1kF signal in combination with other limitations set forth in the respective claim.

Regarding renumbered claim 41, Prior Art fails to disclose wherein said physical layer comprises a high rate direct sequence spread spectrum physical layer, wherein said transmitter comprises a differential quadrature phase shift keying (DQPSK) modulation transmitter, wherein said output RF signal comprises a complementary code keying modulated signal, wherein said physical

medium dependent sublayer further comprises: a scrambler that receives at least one data frame and outputs a scrambled at least one data frame; a data multiplexer that receives said scrambled at least one data frame, wherein said data multiplexer outputs a first multiplexed data portion and a second multiplexed data portion; and a complex code selector module that receives said first multiplexed data portion and outputs a selected code; and wherein said DQPSK modulation transmitter receives said selected code and said second multiplexed data portion, wherein said DQPSK modulation transmitter transmits said output RF signal in combination with other limitations set forth in the respective claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G. Shah whose telephone number is 571-272-3144. The examiner can normally be reached on M-F 6:45 to 4:15, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cgs  
May 17, 2005

  
**Ajit Patel**  
**Primary Examiner**